



Mission Scoping Assessment

FEMA-4273-DR-WV September 2016
Federal Interagency Recovery Coordination

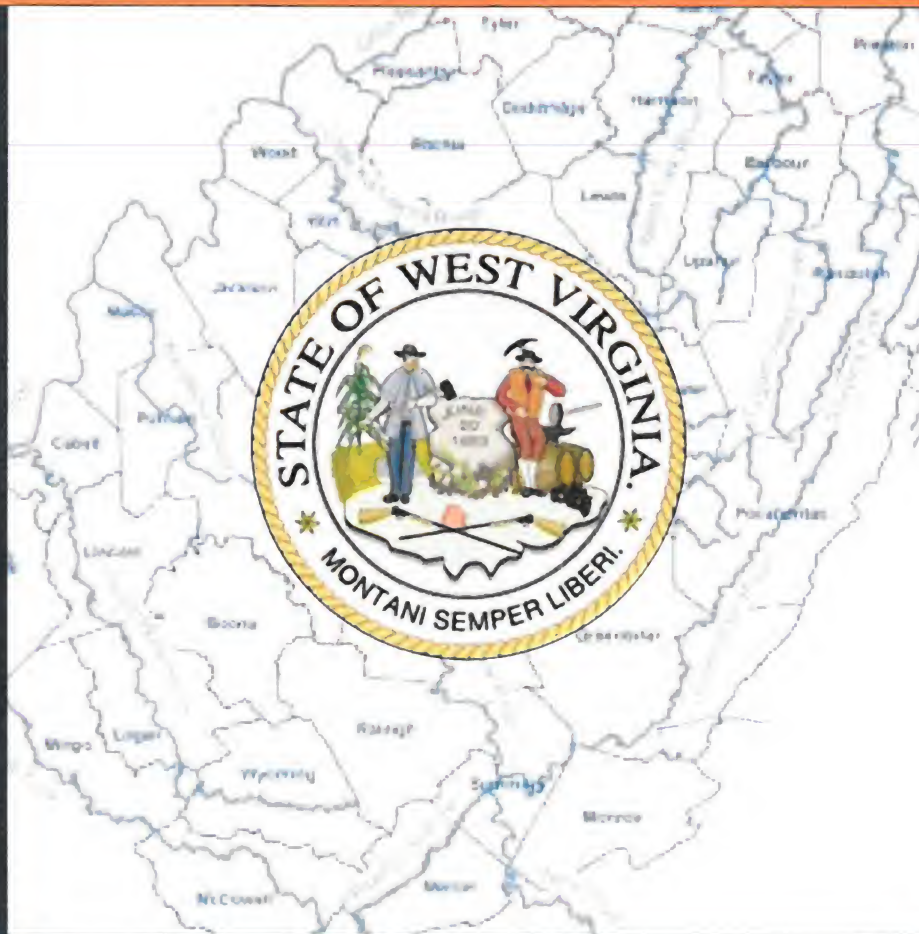


Table of Contents

Executive Summary	3
Background and Current Situation.....	4
Methodology	6
Recovery Support Functions Findings and Recommendations	8
Cross-cutting Recovery Issues.....	8
Community Planning and Capacity Building (CPCB).....	9
Background	9
Analysis and Methodology.....	9
Summary of Issues	12
Economic.....	16
Background	16
Economic Recovery Issues	20
Housing Recovery	30
Background	30
Housing Recovery Issues.....	31
Next Step: The Recovery Support Strategy.....	42



Executive Summary

On June 24, in response to severe storms, flooding, landslides and mudslides in West Virginia, Governor Earl Ray Tomblin requested federal assistance. On June 25, the president issued a major disaster declaration. As amended, the declaration designated 12 counties for the Federal Emergency Management Agency's (FEMA), Individual Assistance (IA) and Public Assistance (PA) programs: Clay, Fayette, Greenbrier, Jackson, Kanawha, Lincoln, Monroe, Nicholas, Pocahontas, Roane, Summers and Webster. Six counties were designated for PA only: Braxton, Gilmore, Lewis, Randolph, Upshur, Wayne. Additionally, FEMA Mitigation funding was made available statewide. The disaster caused 23 deaths. Thousands of West Virginians were uprooted from their damaged or destroyed homes and more than 100 businesses were severely damaged or destroyed.

Due to the severity and magnitude of the disaster, FEMA Region III Regional Administrator and the Federal Coordinating Officer assigned to West Virginia, requested a National Disaster Recovery Support Advance Evaluation Team (AET) to determine whether the state would require enhanced recovery coordination.

To lead and manage the state's recovery, Governor Tomblin appointed Adjutant General James A. Hoyer as Chief Recovery Coordinator (CRC) and Keith Burdette as the State Disaster Recovery Officer. The Advance Evaluation Team (AET) submitted its report on July 15, 2016. It recommended activation of a Federal Disaster Recovery Coordinator (FRDC) and three Recovery Support Functions (RSFs): Community Planning and Capacity Building, Economic and Housing.

September 7, 2016 was the extended deadline for survivors to register for FEMA's IA grant program and apply for disaster loans. By then, almost 5,000 applicants had been approved for IA grants totaling more than \$39.7 million. The U.S. Small Business Administration (SBA) had approved more than \$47.6 million for disaster recovery loans to 672 homeowners and 61 businesses. As of early September, approximately one thousand National Flood Insurance Program (NFIP) claims had been filed. FEMA had received 133 requests for public assistance and obligated more than \$9.7 million for recovery. It is estimated that total amount of federal funds obligated will exceed \$88.7 million.

The RSFs have identified the following major issues for West Virginia's long-term recovery from this disaster.

Community Planning/Capacity Building

- **Local Recovery Capacity Exceeded**
- **State Recovery Capacity Strained**
- **Recovery Planning Challenges**

Economic

- **Pre-Existing Economic Conditions Exacerbated by Flood**
- **Impacted Businesses and Capital Needs**
- **Business Recovery and Preparedness**
- **Impact to Infrastructure**
- **Impact to Tourism and Regional Brands**
- **Agriculture Losses**

Housing

- **Increased Financial Burden of Homeownership**
- **Habitable and Environmentally Healthy Housing**
- **Prevalence of blight in communities**
- **Including resilience in rebuilding**



Background and Current Situation

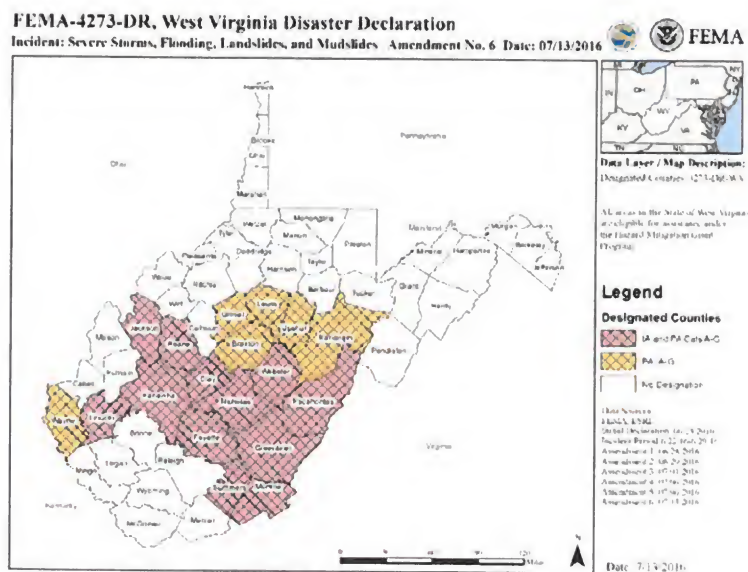
From June 22-29, 2016, severe storms, flooding, mudslides and landslides generated by a slow moving series of storms, one following right after the other brought damage and destruction to many areas of West Virginia. Rural communities, many already losing population and in economic decline, were the hardest hit. At the height of the storm over 65,400 customers were without power. Flooding left hundreds of individuals stranded, requiring rescue, evacuation and/or sheltering.

The severe weather conditions resulted in 23 confirmed deaths. Spanning multiple counties, the severe weather left homes, businesses, and infrastructures across the state damaged or destroyed. Governor Tomblin declared a state of emergency on June 23, 2016. On June 24, 2016, the governor requested a major disaster declaration and on June 25, 2016, President Obama signed a major disaster declaration for 12 counties (FEMA-4273-DR-WV). After the amendment of July 13, another six counties were designated as eligible for Individual Assistance (IA) and Public Assistance (PA), bringing the total number of designated counties to 18. The declaration also made Hazard Mitigation funding available statewide.

Due to the severity and magnitude of the disaster, FEMA Region III Regional Administrator and the Federal Coordinating Officer assigned to West Virginia, requested an Advance Evaluation Team (AET) to determine whether the state would require enhanced recovery coordination.

In rural areas, the mountainous terrain, covering most of the 18 designated counties, confines significant areas of residential and commercial development into low-lying riparian lands. This geographic constraint places much of the population within floodplains. Although no official count is available, it is estimated that 4,600 homes were damaged and 73 were completely destroyed. It is further estimated that approximately 234 businesses were impacted, including 49 businesses destroyed. FEMA has provided temporary rental assistance to 2,849 homeowners and renters displaced by the disaster.

On July 15, 2016, the AET, led by Region I FDRC, completed their report and the State concurred with the team's findings. The Report recommended the appointment of an FDRC and activation of three of the six Recovery Support Functions (RSF) Field



Coordinators to facilitate problem solving, improve access to resources, and foster coordination among state and federal agencies, recovery stakeholders, local governments and non-governmental partners. The three sectors identified for enhanced support are; Community Planning and Capacity Building (CPCB), Housing and Economic. RSF Field Coordinators worked along with the NDRS Cadre and their Advisors to conduct the Mission Scoping Assessment. On July 13, 2016 the Governor designated the CRO and the SDRO to lead and manage the recovery efforts for the state.

To date, 8,984 West Virginians had registered with FEMA to determine whether they qualified for Individual Assistance. FEMA approved 4,860 applicants for its individuals and households program and has given more than \$60.3 million in grants to the applicants. The U.S. Small Business Administration (SBA) has approved more than \$40.6 million in low interest disaster loans to assist 678 homeowners and 63 businesses in recovery. Under FEMA's Public Assistance program, more than \$10 million has been obligated for emergency response and infrastructure repair projects.



Methodology

The National Disaster Recovery Framework (NDRF)

The National Disaster Recovery Framework (NDRF) is intended to promote effective recovery from large-scale or catastrophic incidents and enable orchestrated support to impacted states, tribes and local jurisdictions. Its structure is flexible and adaptable for disaster recovery managers who must operate in a unified and collaborative manner, and focuses on how best to restore, redevelop and revitalize the health, social, economic, natural and environmental fabric of the community as well as build a more resilient nation.

The framework defines core recovery principles and the roles and responsibilities of recovery coordinators and stakeholders. It delineates a coordinating structure that facilitates communication and collaboration among all stakeholders, and provides guidance for pre- and post-disaster recovery planning. Lastly, the framework describes the overall process by which communities can capitalize on opportunities to rebuild stronger, safer and smarter.

Recovery Support Functions

When immediate needs have been addressed, the work of long-term recovery begins with attention to enhancing the resilience of individuals and communities to future hazards. As established in the NDRF, leadership at every level is essential to succeed, with inclusion of local disaster recovery managers, state disaster recovery leadership and the FDRC.

RSFs are groupings of core recovery capabilities that provide a structure to facilitate problem solving, improve access to resources and foster coordination among state and federal agencies, non-governmental partners and other stakeholders. Each RSF has a designated coordinating agency along with primary agencies and supporting organizations with programs relevant to the functional area. The RSF sectors are:

- Community Planning and Capacity Building (CPCB)
- Economic
- Health and Social Services
- Housing
- Infrastructure Systems
- Natural and Cultural Resources



Mission Scoping Assessment

The three activated RSFs; Community Planning and Capacity Building (CPCB), Economic, and Housing, conducted the in-depth technical review as reported in this Mission Scoping Assessment (MSA). Substantive data was gathered, analyzed and evaluated, applying recovery core capability specific expertise to identify recovery needs and issues as well as recovery related impacts in which State and local capabilities, and/or capacity, may be exceeded. Areas and communities requiring enhanced federal recovery support are also identified in this report, along with perceived gaps in resources available to meet recovery needs.

All three RSFs identified disaster related issues that have exceeded the State's existing recovery capacity. Accordingly, continued RSF activation may be necessary to coordinate and develop a Recovery Support Strategy (RSS). The RSF MSA findings also validate the Advance Evaluation Team's recommended FDRC appointment and Mission Assignment of other Federal Agencies to fulfill the RSF Field Coordinators' roles and responsibilities under the NDRF.

Results of the MSA offer insight into West Virginia's long-term recovery issues, challenges and opportunities, in accordance with the Recovery Federal Interagency Operational Plan (FIOP) and as envisioned in the National Disaster Recovery Framework.



Recovery Support Functions Findings and Recommendations

Cross-cutting Recovery Issues

Housing, Economic, and Community Planning and Capacity Building disaster recovery issues often overlap. Below are brief descriptions of these cross-cutting issues.

Central West Virginia has been hit by a sharp downturn in revenues from coal severance taxes, unemployment and multiple flooding disasters. The coal industry is experiencing a significant downturn. Unemployment is up not only in the extractive industries, but also in the once supportive construction, transportation and utility sectors. Lack of local jobs has led to a net out migration and a negative natural change due to the depressed economy. These factors are negatively affecting the quality and availability of affordable housing.

Flooding, mudslides, and landslides may have also compromised individual, private waste disposal systems. Fecal coliform levels in many West Virginia watershed are elevated (e.g., Elk, Guyandotte, Cherry, Greenbrier, and Gauley). The source of much of this pollution can be attributed to human waste, but flooding debris is more visible and of significant concern to the public's perception. Tailored, individual watershed strategies for this work may be appropriate.

Coal companies not only closed their doors but are also selling off their inventory. With less physical assets on the premises, county governments have less assets to tax. While county and other local government may have the administrative capacity to address disaster situations, there may not be any funds available to pay up-front costs and hire additional staff to handle specific disaster recovery tasks.

Housing disaster recovery must have a strong mitigation component to break the cycle of disaster disruptions. Recovery of impacted housing throughout the valley communities involves three inter-related resiliency issues; strong private water crossings, septic systems, and elevated, flood-resistant residences. Rapid flood surges can and often will cause severe disruptions to rural communities throughout the mountain valleys of West Virginia. Flood waters are not the only issue – landslides and mud slips have ruined many homes and disrupted travel and access into and out of these rural communities.

Since 2009, counties designated for the June 2016 flooding disaster have been part of up to six disaster declarations. Without another option to rebuild better and more resiliently, it is uncertain how long these rural communities can remain viable. Housing designers and community advocates should combine their collective, creative expertise to develop better rebuilding options.

Finally, survivor populations are much more likely to represent underserved populations than the balance of the state. Housing assistance applicants tend to live in housing of lesser value, have lower median incomes and are older than state norms.



Community Planning and Capacity Building (CPCB)

The mission of the Community Planning and Capacity Building (CPCB) Recovery Support Function (RSF) is supporting and building recovery capacities and community planning resources of local, state, territorial and Tribal governments needed to effectively plan for, manage, and implement disaster recovery activities in large, unique or catastrophic incidents.

Background

CPCB RSF worked with other federal partners to identify issues in the 12 West Virginia counties designated for FEMA's IA Program: Clay, Fayette, Greenbrier, Jackson, Kanawha, Lincoln, Monroe, Nicholas, Pocahontas, Roane, Summers and Webster. Among other resources, specialists used FEMA Program Damage Assessments and Applicant Registrant Reports, FEMA Information Data Analysis (FIDA), U.S. Census Bureau data, Social Vulnerability Index (SoVI), Baseline Resilience Indicators for communities (BRIC) scores, and Small Business Administration (SBA) disaster loan data to identify communities with the greatest challenges to recovery. Community Recovery Assistance Specialists focused on evaluating impacts to the most damaged communities relative to their capacity to manage, plan, and implement disaster recovery projects and strategies. CPCB, in coordination with federal partners (identified on page 9), and the State of West Virginia, culled and refined this information to identify relevant recovery issues, planning challenges and opportunities.

Analysis and Methodology

The severe storms, flooding, landslides, and mudslides of June 22-29 affected economically depressed communities across West Virginia from the northwest to the southeast. Many of these communities are small municipalities with declining populations, economies and, widespread poverty and blight.

While the disaster area includes the State's capital (Charleston, Kanawha County), the most challenged communities are in rural areas with economies dominated by mining and associated industries. Many communities have fewer than 2,500 residents and lack codified zoning ordinances or land-use planning and building inspection capacities. They are more likely to use state Regional Planning and Development Councils for community, transportation, hazard mitigation and water quality planning while others don't do any planning. Generally, communities with land use regulations and policies have greater capacity to shape and rehabilitate their built environment.

Recovery activities may diminish an already stressed community's strengths and reveal weaknesses. Post-disaster community planning can provide an opportunity to discuss and incorporate ideas and principles designed to foster resilience, address issues that created pre-disaster obstacles, mitigate risk and approach planning in an integrated way.



Socially vulnerable groups are often overwhelmed with their day-to-day livelihood and may not have the capacity to participate in planning for recovery. It is important to know where potential capacity gaps are and understand why they may exist. Additionally, ensuring that all voices are equitably included in outreach and community planning is vital to whole community recovery.

An assessment of social vulnerability is important as a means for determining where resources might be used more efficiently to assist in recovery. The Social Vulnerability Index (SoVI) shows the demographic makeup of communities. Social vulnerability describes the inequalities of who recovers and where.

It is more than just wealth and poverty or race and ethnicity indicators; it also demonstrates uneven capacity for preparedness and response. The pre-event social character of a place either enhances or diminishes its ability to adequately prepare for, respond to and recovery from disasters.

The SoVI index synthesizes 30 socioeconomic variables that contribute to a community's ability to prepare for, respond to, and recover from hazards.

CPCB has identified 11 communities and one county that meet the criteria of having both sustained significant disaster impacts and limited recovery capacity.

CPCB Partners

Coordinating Agency

FEMA/Department of Homeland Security (DHS)

Primary Agencies

FEMA/DHS

U.S. Department of Housing and Urban Development (HUD)*

Supporting Agencies

American Red Cross (ARC)

Corporation for National and Community Services (CNCS)

Delta Regional Authority (DRA)

Department of Agriculture (USDA)*

Department of Commerce (DOC)*

Department of Education

Department of Health and Human Services (HHS)

Department of Homeland Security (DHS)

U.S. Department of Housing and Urban Development (HUD)*

U.S. Department of the Interior (DOI)*

Department of Justice (DOJ)

Department of Transportation (DOT)

Environmental Protection Agency (EPA)*

General Services Administration (GSA)

National Voluntary Organizations Active in Disaster (NVOAD)*

Small Business Administration (SBA)*

U.S. Access Board

U.S. Army Corps of Engineers

**Federal agencies engaged in MSA development*



These areas of interest listed are:

- Camden on Gauley, Webster County
- City of Alderson, Greenbrier County
- City of Clendenin, Kanawha County
- City of Richwood, Nicholas County
- Clay County*
- Town of Cowen, Webster County
- Town of Gauley Bridge, Fayette County
- Town of Rainelle, Greenbrier County
- Town of Ronceverte, Greenbrier County
- Town of Rupert, Greenbrier County
- Webster Springs, Webster County
- White Sulfur Springs, Greenbrier County

** Due to the size of Clay County (under 9,000 residents) and a population of under 500 residents in the town of Clay, it would be more effective to address at a county level rather than at a municipal level.*

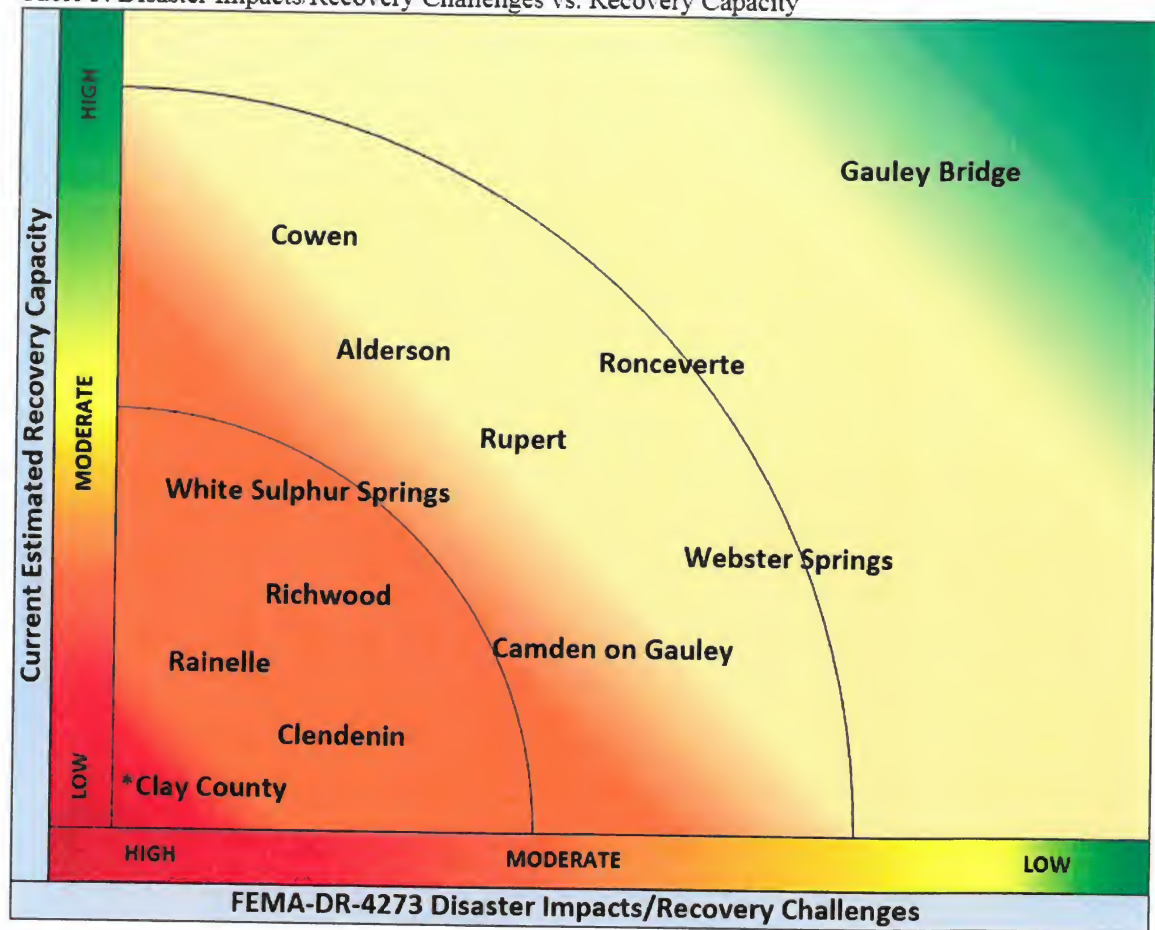
Another key determinant of relative disaster impact is comparative analysis of damage to communities. One primary factor is the percentage of damaged households in designated counties. FEMA Information Data and Analysis (FIDA) reports from the Individual Assistance program provide the FEMA Verified Loss (FVL) figures that were compared to the number of households within a community of interest. Another disaster impact comparison is damage to a community's infrastructure. In this case, public infrastructure damage information came from PA Preliminary Damage Assessment (PDA) estimates. Multi-sector damage information obtained from local officials and community organizations was factored in as a recovery challenge.

Recovery capacity was determined by conducting a preliminary analysis of a community's operations, including staffing levels, boards and committees, as well as evidence of existing hazard mitigation comprehensive and land use plans. CPCB also coordinated internally with other FEMA programs to identify recovery capacity, including NFIP program compliance, Voluntary Agency coordination, FEMA External Affairs coordination, and Disability Integration. Social and demographic indicators were also considered to estimate the time and resources that community members might have to dedicate to recovery efforts. A complete list of indicators and other demographic data can be found in the Community Conditions Assessment Appendix.

In the graph on page 11, the eleven communities and Clay County are plotted by disaster impacts/recovery challenges and recovery capacity as low, moderate or high.



Table 3: Disaster Impacts/Recovery Challenges vs. Recovery Capacity



Summary of Issues

CPCB identified three sector-specific recovery issues.

Local Recovery Capacity Exceeded

- Limited Staffing, Capabilities or Capacity
- Limited Access to Resources
- Continued Susceptibility to Flooding

State Recovery Capacity Strained

- Limited Institutional Knowledge and Staffing
- Need for Broader Recovery Coordination

Recovery Planning Challenges

- Lack of pre- and post-disaster recovery planning
- Lack of Comprehensive Planning

Local Recovery Capacity Exceeded

Recovery capability and capacity varies widely across the state. Recovery capability refers to the skills, competencies, resources and abilities of people, governments and communities needed to plan for, implement and manage disaster recovery efforts. Recovery capacity refers to the amount of capability available within the specific local communities. The size of West Virginia's communities ranges from very small in rural areas to medium sized urban areas. For example, Kanawha County has a population of nearly 195,000, while Clay County has a population of just under 9,000. Smaller communities in the WV disaster-impacted area lack capacity to address recovery issues such as floodplain administration, applying for and managing grants, ensuring code enforcement and compliance, developing and implementing recovery plans, and ensuring that the whole of community is represented in the recovery decision-making process.

Limited Staffing, Capabilities or Capacity

After the response phase of a disaster, recovery begins and the focus turns to meeting the survivor's immediate and short terms needs, such as home repair or food. Gradually the entire emphasis turns to long-term recovery. For impacted municipalities, damages from the disaster have likely strained the capacity of robust governments to manage recovery and diminished the ability of governments with meager resources to function effectively.

Increased workloads and other demands related to disaster recovery require a community to have the capacity to apply for and administer grants and other funding; create or revise planning documents; process permits, enforce building and land development codes and implement recovery projects and strategies. A wide range of staffed community departments and functions is needed to address the increased workload and provide training that may be needed to be effective in some of the long-term disaster recovery tasks. Many communities are quickly overwhelmed by the demands of long-term disaster recovery as they find themselves without staffing capability and capacity to support the government functions necessary for long-term recovery. There are currently no communities in the WV disaster-impacted with full-time dedicated recovery staff or with published disaster recovery plans in place.

Limited Access to Resources

Communities may have limited knowledge of or access to resources to meet individual, family and community recovery needs. In many instances, disasters negatively impact municipal tax revenues. This affects a community's ability to finance recovery activities including local grant match requirements. According to local representatives, communities often build back to pre-disaster conditions instead of incorporating mitigation and resiliency measures because it is easier and costs less.

Smaller communities often do not have the same broad range of recovery partners or available resources and therefore cannot absorb the costs as well as larger communities. Business closures can cause cascading effects upon the recovery of individuals such as job losses, lower incomes, or limited goods and services and upon communities from a loss or lessened tax base, further constraining their already limited recovery resources.

Without a broad range of recovery partners and resources, communities in the WV disaster-impacted areas will miss out on potential opportunities to build back smarter, safer, and more



resilient. This will also lead to missed opportunities for leveraging recovery resources. The next time disaster strikes, these communities will be much more vulnerable to disaster impacts.

Continuing Susceptibility to Flooding

The natural, built and economic environments of many West Virginia communities remain susceptible to additional damages from future floods. Many communities' structures and infrastructure were built to current Flood Insurance Rate Map (FIRM) Base Flood Elevations (BFEs), and these elevations may have been surpassed by subsequent flood events. Flood events and confusion about the National Flood Insurance Program (NFIP) requirements complicate owners' ability to make sound flood recovery and mitigation decisions.

NFIP's revised maps can create uncertainty. As homeowners are making rebuilding decisions communities may need to increase local regulatory floodplain monitoring. In addition, many residents in flood-prone areas face financial challenges bringing their homes into regulatory compliance.

Due to flood susceptibility and limited local regulatory monitoring, these communities are at greater risk of having NFIP compliance issues/violations, which may lead to suspension from the NFIP program; greater risk of damage resulting from future flooding; and higher insurance premiums resulting from improperly building existing structures back in accordance with local floodplain ordinance standards.

State Recovery Capacity Strained

Limited Institutional Knowledge and Staffing

The state has very strong preparedness, response and shorter term response capabilities but could benefit from additional long-term recovery workshops and training. West Virginia currently lacks a disaster recovery plan or an identified state-level agency that is pre-identified to lead recovery management efforts. Without clearly defined recovery roles and responsibilities, the State is limited in their ability to quickly and efficiently address a wide range of recovery issues and gaps. While many State agencies have some knowledge of their roles and responsibilities in disaster recovery, there exists no established recovery structure. This limits their ability to expeditiously and effectively address recovery needs and challenges. In the event of a new administration as a result of the November 2016 elections, a significant amount of institutional knowledge could be lost due to organizational restructuring and staff changes.

Need for Broader Recovery Coordination

Widespread disaster impacts across multiple sectors create a greater need for recovery coordination across federal, state and local partners to minimize duplication of efforts and optimize opportunity. State capacity affects all sectors of community recovery. Many recovery efforts are currently underway; however, the responsible parties need to ensure that all partners have a seat at the table. Otherwise, they may inadvertently reduce their ability to properly identify and leverage all available resources.



Recovery Planning Challenges

Pre-disaster recovery plans increase the speed of recovery. The quality of the recovery that takes place often determines how resilient a community is for the next disaster. Time pressures and difficulties in communication in the post-disaster environment make it difficult to increase a community's resilience. Pre-disaster planning is necessary to ensure adequate tools are available following a disaster and to ensure that the whole community works cohesively to reduce vulnerability to future events.

Lack of Pre- and Post-Disaster Recovery Planning

West Virginia's 11 Regional Planning and Development Councils (RPDCs) coordinate and provide technical assistance for regional and local planning efforts. Their plans include multi-jurisdictional hazard mitigation, transportation, security, watershed, broadband and other plans. Although they support locals and counties with critical planning support, due to budget cuts and staffing constraints, the RPDCs lack capacity for recovery planning and building capacity.

Locally driven disaster recovery planning processes assist communities in making informed decisions about goals, policies, priorities and projects that will guide overall recovery. Currently there are no known West Virginia communities with existing pre- or post-disaster recovery plans. There is limited awareness of National Disaster Recovery Framework concepts, principles, or tools and limited resources for recovery.

Lack of Comprehensive Planning

The existence and quality of a comprehensive plan is a measure of local capacity to conduct post-disaster recovery planning processes. It illustrates the conviction of a community to improve itself. A good plan is one that translates ideas into actionable projects, each with a project champion and deadline for implementation.

Inclusive planning efforts involve all populations, including the underserved and those with access and functional needs. Failure to integrate diverse and underserved populations in recovery efforts creates barriers to a full recovery.

Many of the communities identified in the disaster-affected area do not have comprehensive community plans. This is noteworthy because planning processes are a conduit to engage with stakeholders to define a shared vision before and after a disaster and to help ensure implementation of recovery opportunities.



Economic

The Economic Recovery Support Function (RSF) integrates the expertise of the federal government to help local, state, and tribal governments and the private sector, sustain and/or rebuild businesses and employment, and develop economic opportunities that result in sustainable and economically resilient communities after large-scale and catastrophic incidents.

Background

After an incident, the Economic Recovery core capability is best characterized as promoting coordination, integration, and collaboration among the economic recovery stakeholders of the affected area to support individual decision-making and leverage existing resources. Common stakeholders in this effort include chambers of commerce, economic and workforce development organizations, local governments, and regional planning organizations.

The most current economic impact data available was considered by the Economic RSF and its federal partners in defining the issues anticipated to frame future areas of federal focus and assist the state in developing their economic recovery strategies. Also, part of this assessment is an examination of the issues related to economic recovery and the challenges to developing long-term economic resilience in impacted communities in West Virginia.

The U. S. Economic Development Administration (EDA), designated by the U.S. Department of Commerce, is serving as the coordinating agency of the Economic RSF. EDA is collaborating with the state's economic recovery team to monitor potential economic impact reports—including those regarding tourism and direct business impact assessments—to determine unmet needs and identify potential assistance that might be delivered by federal partners to support economic recovery and resiliency initiatives.

Economic Partners
Coordinating Agency
Department of Commerce (DOC)
Primary Agencies
FEMA/DHS
Department of Agriculture (USDA)
Department of Commerce (DOC)
U.S. Department of Labor (DOL)
Small Business Administration (SBA)
U.S. Department of the Treasury (TREAS)
Supporting Agencies
Corporation for National and Community Services (CNCS)*
Delta Regional Authority (DRA)
Department of Health and Human Services (HHS)*
U.S. Department of Housing and Urban Development (HUD)*
U.S. Department of the Interior (DOI)*
Environmental Protection Agency (EPA)*
Department of Homeland Security (DHS)
General Services Administration (GSA)
Department of State
Appalachian regional Commission (ARC)*
<i>*Federal agencies engaged in MSA development</i>



Direct and indirect losses to central business districts and impacts to tourism and individual businesses are the primary areas of impact to West Virginia's economy. Additionally, inadequate recovery capacity, damages to housing and infrastructure could affect business recovery and economic revitalization to varying degrees.

The Economic RSF has gathered preliminary economic impact assessments, as described below, and met with local and regional economic development stakeholders to identify their primary areas of concern for impacted counties that lie within their jurisdiction. Based on those assessments, the Economic RSF identified communities within 12 counties in Central and Southern West Virginia that have sustained the most direct impacts to their local economies and have registered the greatest need for assistance in recovering individual businesses and recovering economic activity. Those counties include Clay and Kanawha in the Central region and Fayette, Greenbrier, Jackson, Lincoln, Monroe, Nicholas, Pocahontas, Roane, Summers and Webster Counties in the Southern region.

Assessing Economic Impacts

Certain economic impacts of the storm and flooding may not be fully realized for months or years to come. While the Economic Recovery RSF will continue to investigate economic impacts at regional and local levels, initial assessments are based on available information provided by the State of West Virginia's Department of Commerce, U.S. Small Business Administration (SBA), the U.S. Department of Labor (DOL), the U.S. Department of Agriculture (USDA), the Federal Emergency Management Agency (FEMA), and other RSF teams engaged in West Virginia's recovery.

Following the disaster, the SBA and DOL offered financial assistance to businesses and their employees who were impacted by the event for a period of time due to permanent or temporary business interruption. To quantify the range of economic impacts, the Economic RSF reviewed and will continue to consider the delivery of federal assistance and state supported programs offered to businesses, individuals, and local governments located in flood-impacted areas. The number of applications submitted and the dollar amount of assistance awarded through each of these programs provide some indicators of overall economic impact. Because of the limited scope of assistance each program can offer, however, the impact data they provide does not present a comprehensive description of the businesses, workers or communities affected by flood damage.

For instance, SBA loan applications can serve as a preliminary proxy to identify areas of impact because they reflect the level of initial interest for assistance in financing repairs to commercial buildings, replacing equipment or inventory, or assisting with business cash flow shortages. For a number of reasons, the number of applications or approvals does not necessarily reflect the full extent of the unmet funding needs of affected businesses. As days and weeks elapse following a disaster event, some business applicants will withdraw applications because they have satisfied their funding needs through collection of insurance claims or other sources and often business owners will not apply for SBA assistance because they do not qualify or cannot afford to take on more debt.

In order to develop a comprehensive picture of the economic impact and particular recovery challenges for individual communities, the Economic RSF is collaborating with the West Virginia Department of Commerce, Regional Economic Development Districts (EDDs), and local organizations to assess the comprehensive economic impacts as data and other relevant indicators – such as the collection of business and occupation taxes – as they become available. Continued assessment of the economic challenges will support the ability of the state and the local communities to define the challenges, identify resources to assist with addressing those challenges, and prioritize actions that need to be taken in order to both recover local businesses and integrate economic resilience measures into local economies.

REGIONAL REALITIES

The economic RSF has taken a regional approach to economic recovery due to the rural nature of the impacted area. The regional EDDs have instrumental tools and staff expertise that support community and economic development initiatives within their boundaries. EDD Regions 3 and 4 are the most severely impacted. Both EDDs are highly engaged in their communities, professionally staffed, and serving in both a leadership and coordination role within their respective boundaries as detailed below.

Region 4 Economic Development District (Fayette, Greenbrier, Nicholas, Pocahontas, and Webster Counties)

The region consists of 3,847 square miles and has a population of 125,625 (2010). The area is mountainous, lying within the Appalachian Mountain range. It is rural and is served in parts by major transportation routes US 60, US 119, & I-77.

Coal, timber, natural gas and tourism comprise a significant part of the economic activity of the area. The region includes some of the most highly recognized tourism destinations in the state including the Greenbrier Resort, New River Gorge Bridge, Summersville Lake, Babcock State Park and Hawks Nest State Park, and Seneca State Forest and the Monongahela National Forest, the Green Bank Radio Telescope Observatory and Droop Mountain Battlefield.

The five counties that are included in this region sustained some of the most extreme damage and economic disruption due to the flood, with communities in Greenbrier and Nicholas counties reporting the highest losses in infrastructure and business impacts. Greenbrier County hosts the Greenbrier Classic, part of the PGA-Tour, which was cancelled due to the flooding.

Initial assessments by local economic developers reported that more than 165 business sustained physical damage or other losses due to the June flood. About 35 of those businesses remained closed as of early September. The central business districts in White Sulphur Springs and Rainelle in Greenbrier County and Richwood in Nicholas County have completed their initial cleanup but are still struggling to fully recover. Local leaders in these communities have expressed concerns about limited staffing and financial resources to assist with recovery efforts. Elected officials in Richwood have requested assistance in hiring a contract coordinator to oversee major recovery projects.



Local economic developers initiated the process to obtain federal support in hiring regional disaster recovery coordinators to support local economic recovery efforts.

As they turn their focus on longer term flood recovery efforts, the regional EDDs and local leaders can enlist assistance from a strong network of economic development organizations including and academic institutions including Bridge Valley and New River Community and Technical Colleges.

Region 3 Economic Development District (Boone, Clay, Kanawha and Putnam Counties)

The region stretches across 2,108 square miles and has a population of 282,567 (2010). It includes Kanawha County, which is home to the capital city of Charleston and the Charleston Metropolitan Area, which includes half of the region's population. The Charleston area is also the center of the chemical and manufacturing industries, which are major economic drivers for the state's economy. Other major employers that operate in the region include the natural gas, lumber, agriculture, tourism, and health care industries.

The region is served by major transportation routes including US 60, US 35, I-64, I-77, and I-79. The Kanawha and Elk Rivers flow through this region, with the Kanawha serving as both a commercial and recreational waterway and the Elk as a recreational waterway. Tourism destinations in the county including Kanawha State Forest, Carnifax Ferry Battlefield and the State Museum. The area also includes Yeager Airport, the largest airport in the state, with both commercial and domestic flights.

Flood damage to the infrastructure and central business districts in this region is concentrated in the town of Clendenin in Kanawha County and the town of Clay and the surrounding area in Clay County. More than 100 businesses have reported damage in Clendenin and the town of Clay reported at least 37 businesses were impacted by the flood. A private bridge was washed out in Elkview in Kanawha County, where the Crossing Mall Shopping Center remains closed. At least two of the major employers will not be reopening and more than 60 jobs will be lost.

Region 2 Economic Development District (Cabell, Lincoln, Logan, Mason, Mingo and Wayne)

The region consists of 2,566 square miles and has a population of 251,426 (2010). Coal, natural gas, lumber, light industry, agriculture, tourism and education are the major employers in this region. Flood damage in this region is concentrated in Lincoln County, which primarily sustained damage to public utilities and farmland.

Region 5 Economic Development District (Calhoun, Jackson, Pleasants, Ritchie, Roane, Tyler, Wirt, and Wood)

The region spans 2,699 square miles and has a population of 171,299 (2010). Oil, gas, sand, aluminum production, and polymer (chemical) production, agriculture and lumber constitute the major industries. The majority of the flood damage to this region affected public utilities and farms in Jackson and Roan Counties.



Region 7 Economic Development District (Barbour, Braxton, Gilmer, Lewis, Randolph, Tucker, and Upshur Counties)

The region consists of 3,496 square miles and has a population of 116,777 (2010). Oil, gas, lumber, and tourism comprise the major industries. Flooded farmland and infrastructure damage in Braxton, Gilmer, Lewis, Randolph, and Upshur Counties constituted the major damage in the region.

Economic Recovery Issues

PRE-EXISTING ECONOMIC CONDITIONS EXACERBATED BY FLOOD

The 12 counties that were the most heavily impacted by the flood also include some of the chronically distressed communities in West Virginia. A number of economic challenges, most particularly the downturn in the coal industry, have had a devastating impact on businesses and the workforce throughout the central and southeast regions. The eroding economic conditions have rippled throughout the communities and have threatened the capacity of businesses to rebound and the public institutions to manage overall flood recovery.

Over the last 24 months, the 12 declared counties collectively have a 7.0 percent unemployment rate, which is 1.54 points higher than the national average of 5.46. Two of the counties, Clay and Roane, have reported unemployment rates that are more than double the national average. Per capita income for the 12 counties is \$23,858 or 83.55 percent of the national average. Some of the hardest hit counties report even lower per capital income. For instance, Clay County has per capita income of as low as \$16,487 or just 57.7 percent of the national average.

The declining economies are considered to have considerably contributed to the loss of younger workers and therefore, the aging of the population. The average age of the residents in the most heavily impacted communities is 44.3 compared to the national average of 37.4. Nearly 30 percent of the population is over the age of 55. Four of the most heavily impacted counties also have experienced population growth well below the national average. The issue of out migration is compounded by the aging population.

Economic Distress Criteria—Primary Elements

	Region	U.S.	Threshold Calculations
24-month Average Unemployment Rate (BLS) period ending July 2016	6.82	5.28	1.54
2014 Per Capita Money Income (5-year ACS)	\$23,858	\$28,555	83.55%
2014 Per Capita Personal Income (BEA)	\$36,969	\$46,049	80.28%
2000 Per Capita Money Income (Decennial Census)	\$17,240	\$21,587	79.86%



Economic Distress Criteria—Geographic Components

	24 Month Unemp	Threshold Calculatio n	BEA PCPI	Threshold Calculatio n	Census PCMI (2000)	Threshold Calculatio n	ACS 5- Year PCMI	Threshold Calculatio n
Clay County, WV	10.89	5.61	\$27,555	59.8	\$12,021	55.7	\$16,487	57.7
Fayette County, WV	8.39	3.11	\$30,314	65.8	\$13,809	64	\$18,928	66.3
Greenbrier County, WV	6.25	0.97	\$34,966	75.9	\$16,247	75.3	\$22,913	80.2
Jackson County, WV	6.89	1.61	\$33,560	72.9	\$16,205	75.1	\$22,870	80.1
Kanawha County, WV	5.79	0.51	\$44,039	95.6	\$20,354	94.3	\$27,913	97.8
Lincoln County, WV	9.35	4.07	\$27,096	58.8	\$13,073	60.6	\$18,824	65.9
Monroe County, WV	5.31	0.03	\$28,577	62.1	\$17,435	80.8	\$20,041	70.2
Nicholas County, WV	8.95	3.67	\$32,557	70.7	\$15,207	70.4	\$22,674	79.4
Pocahontas County, WV	7.88	2.6	\$33,690	73.2	\$14,384	66.6	\$21,120	74
Roane County, WV	10.85	5.57	\$30,672	66.6	\$13,195	61.1	\$18,124	63.5
Summers County, WV	6.77	1.49	\$26,714	58	\$12,419	57.5	\$19,181	67.2
Webster County, WV	7.80	2.52	\$26,692	58	\$12,284	56.9	\$17,423	61

Sources: U.S. Bureaus of Census, Labor Statistics, and Economic Analysis; Calculations generated by StatsAmerica.

According to the West Virginia Coal Association, prior to the flood, mining production in the state was already down by 54 million tons and \$1.6 million have been lost in wages alone. In the 12 counties that had the most severe impact, more than 7,200 direct positions were lost according to the Workforce Adjustment and Retraining Notifications (WARN) issued over the past six years. Using the multiplier of 4.4 as prescribed by the U.S. Bureau of Economic Analysis, the loss of more than 7,000 direct jobs triggers the loss of many as 32,000 indirect jobs. The impact is further compounded by the lack of capacity at the state and local government levels to deal with this economic downturn. In July 2013, the state distributed \$8,607,916 in Coal Severance Tax, the amount of tax imposed on mining and processing coal, to all units of local government. The tax collection has declined more than 50 percent to \$4,461,671 in 2016.

Before the flood, the state was facing a \$250 million budget deficit, which the legislature addressed through numerous spending cuts in order to balance the 2017 budget. Because of the difficult budget challenges at the local and state levels, the West Virginia Department of Commerce and the EDDs are looking for resources to dedicate to recovery initiatives.

Communities throughout the impacted regions have traditionally depended on natural resource-based industries – particularly coal – as their primary economic driver and employer. The lack of economic diversification has been problematic and these communities have been struggling to “reinvent” themselves through the development of businesses in tourism, value-added wood products, agribusiness and manufacturing. Workforce West Virginia has focused resources on retraining dislocated coal industry workers through its “Displaced Worker” program. As of August 2016, 1,470 former coal industry workers have completed the training program but only 584 of them have found employment in other fields.



Most, if not all, of the counties in the heavily impacted areas have long struggled with a variety of major infrastructure challenges that have impeded economic growth and diversification. The lack of basic infrastructure in some communities and the deteriorated condition of much of the infrastructure that does exist, present significant challenges to flood recovery in general and economic revitalization in particular.

Numerous areas in the impacted area still do not have potable water or sanitary sewer service and those that do are struggling with the age and condition of the system. For example, the Richwood waste-water treatment plant was constructed in the 1960's and needs to be upgraded or replaced. White Sulfur Springs had an infiltration problem with its wastewater treatment plant prior to the flood that still needs to be addressed, the treatment plant is currently operating at 1.5 percent of its capacity.

High-speed broadband internet service, an infrastructure system considered essential to diversifying and growing local economies, is also not available in the impacted area with the exception of parts of Kanawha County.

IMPACTED BUSINESSES AND CAPITAL NEEDS

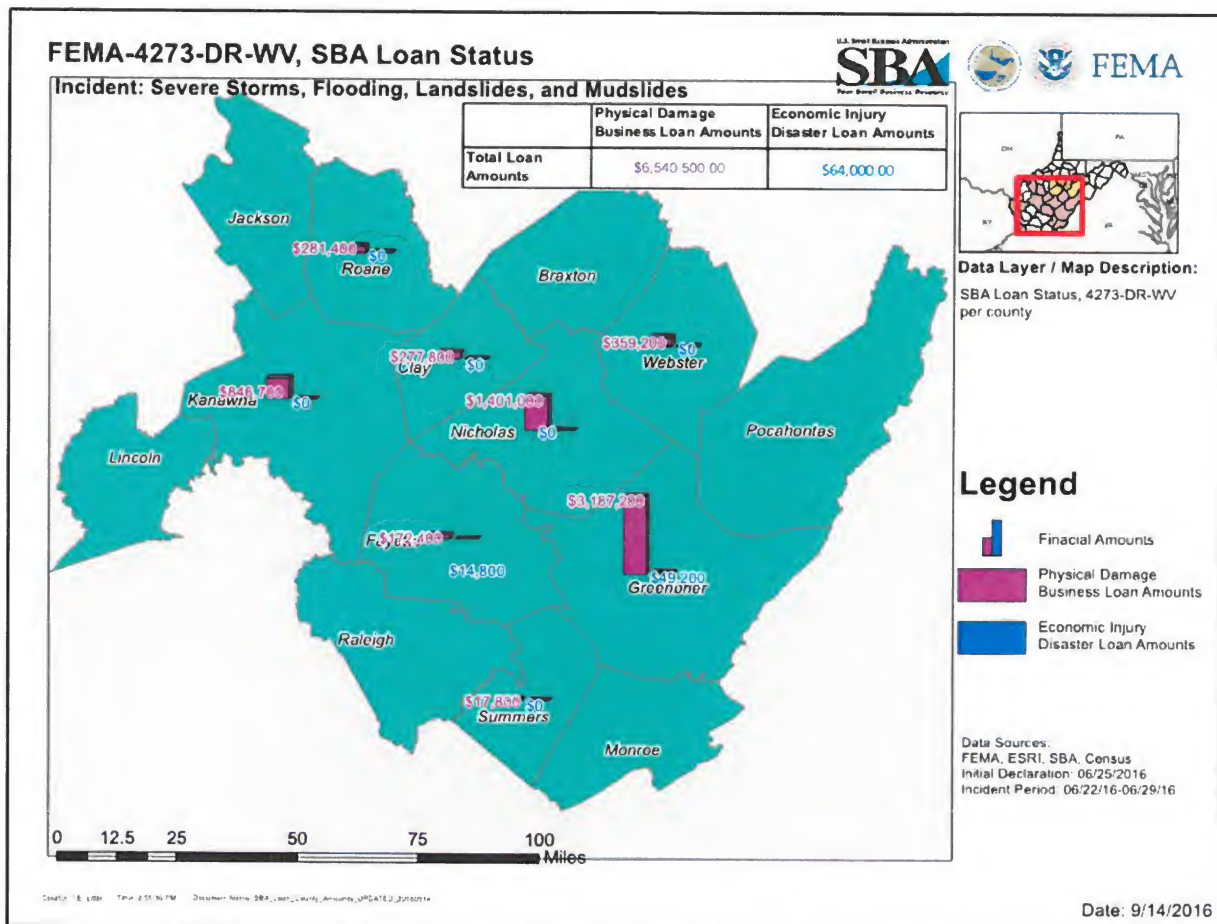
The communities that sustained the heaviest flooding in June continue to wrestle with the direct and indirect economic impacts imposed by damaged infrastructure systems, negative publicity related to tourism attractions and a lack of capacity to pay for or manage flood recovery. In addition, there is still much work to be done to address the needs of individual businesses that sustained direct losses from damage to facilities, lost inventory and customers.

While the Greenbrier Resort, Greenbrier County's largest employer, was temporarily closed because of heavy flooding, the flooding did not significantly impact most other large employers. Dozens of small businesses, primarily retailers and service providers, were destroyed or damaged and their owners are still reeling from the effects of the flooding and the loss of assets and revenue associated with the damage.

The SBA offers the primary federal assistance to individual businesses through two types of disaster loans. One disaster loan program assists businesses in addressing physical damage, including replacing facilities, inventory and other lost property. The SBA also offers businesses "economic injury" loans for those who have lost revenue or customers, regardless of physical damage to their properties.

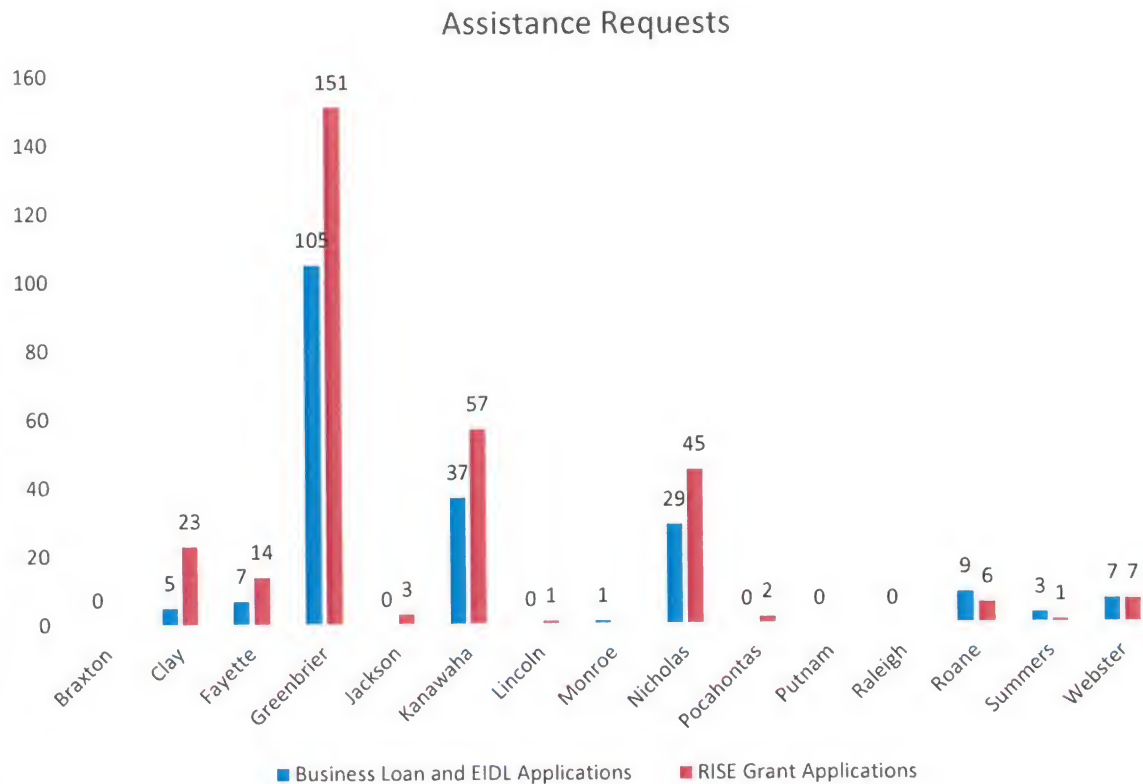
As of September 15, SBA has approved 63 of 150 loan applications it received for physical damage, for more than \$6.5 million. As of early September, only eight applications for economic injury disaster loans have been submitted to SBA and two of those have been approved for a total amount of \$64,000.





Recognizing the capital needs of affected businesses, the state collaborated with the West Virginia Chamber of Commerce to create RISE West Virginia in response to critical business needs resulting from the floods. The public-private grant program provides assistance for small businesses that were operational before the flooding and are working to reopen while struggling with existing debt and limited resources. The program has drawn funds from the state and private donors.

As of early September, a total of 310 businesses had applied for RISE grants, with 151 of those applicants doing business in hardest hit Greenbrier County. A total of \$426,900 in grants have been distributed to businesses. Although the state continues to seek more funding, initial public and private funding amounted to \$2 million. In order to apply for RISE funding, a business not only has to demonstrate it was an operating business in one of the 12 most impacted counties, but it must also have a plan to continue operations and to reopen, if the business is currently closed.



In order to illustrate the degree of economic damage, the Economic RSF has developed the matrix shown on page 24 that includes data reflecting the current status of federal and state business assistance programs, the number of major infrastructure projects and the number of businesses that have reported losses due to the June flood. As is evident in the matrix, communities in each of the 12 counties sustained significant damage to their commercial centers and the underlying infrastructure that serves them. The “cumulative score” reflects the level of damage recorded to date and does not indicate any prioritization of assistance that may be needed in any community. The Economic RSF will continue to conduct data collection and interviews with local and regional economic developers and other leaders to better understand the direct and indirect flood damage to businesses and community economies.



County	Unemployment Rate 2016	RISE Grant \$	RISE Grant #	Damaged Central Bus. Districts*	Approved SBA Business Loans	Disaster Unemployment Assistance	Large PA Projects**	Cumulative Score
Greenbrier	4.5	\$219,900	151	125	\$3,236,400	\$23,324	7	23
Nicholas	8.4	\$65,00	45	33	\$1,401,000	\$6,477	5	21
Kanawha	5.1	\$82,000	57	100	\$843,700	\$15,891	13	20
Clay	9.9	\$ -	23	45	\$277,800	\$11,022	0	14
Webster	8.9	\$10,000	7	6	\$359,200	\$ -	3	12
Roane	9.4	\$30,000	6	0	\$281,400	\$3,292	0	10
Fayette	7.4	\$10,000	14	0	\$187,200	\$3,816	1	10
Lincoln	8.1	\$ -	1	0	\$ -	\$ -	1	6
Summers	5.5	\$ -	1	0	\$17,800	\$ -	3	5
Monroe	4.0	\$ -	0	0	\$ -	\$ -	1	3
Jackson	6.0	\$ -	3	0	\$ -	\$ -	0	3
Pocahontas	4.5	\$10,000	2	0	\$ -	\$ -	0	3
average	7.0	\$18,818	14.45	16.73	\$306,191	\$3,682	2.09	9.73
stand. dev.	2.1	\$28,729	19.50	31.74	\$443,181	\$5,406	3.62	6.54
*Based on # of businesses reported destroyed or damaged								
**Does not include debris removal								

BUSINESS RECOVERY AND PREPAREDNESS

Small businesses, particularly “mom and pop” retailers that composed the majority of businesses in the rural communities most affected by the flood, commonly face numerous challenges related to limited resources, lack of business planning and market challenges often beyond their control. A flood or any major economic disruption can often be the tipping point that puts them out of business.

Economic development stakeholders have observed that many of the small businesses in affected communities did not have continuity plans, capital savings, or other resources needed to manage their own recovery. Many of them also are dealing with compounded impacts, as they were already exploring their options due to the loss of customers, decreasing workforce, and lack of capital access imposed by the decline of the coal industry and other traditional economic drivers in their regions.

All of these individual and market factors can present barriers for businesses trying to obtain recovery assistance that is offered. Economic developers have noted that paperwork involved can be daunting and the recovery process confusing. In addition to the difficulties of managing their own personal and business recovery, they also must deal with the uncertainties created by the long-term recovery unknowns as communities deal with the pre-existing economic downturn and long-term flood recovery.



IMPACT TO INFRASTRUCTURE

Long before the June flood, many of the impacted communities had been struggling with challenges posed by inadequate and deteriorating infrastructure. As an example, only an estimated 35 percent of the residents in Clay County have potable water and 10 percent have sanitary sewer service. In Kanawha County, 95 percent of the residents have potable water service and 70 percent have sanitary sewer service, but many of the existing systems are aged, deteriorated and in need of rehabilitation or replacement and relocation.

A number of the same communities have limited ability to obtain loans or to provide the local matching funds required by federal infrastructure assistance programs. The local financial limitations stem from a number of economic realities including a shrinking customer base and inability to increase water and sewer rates due to their customer's inability to pay.

Many of the impacted areas, including White Sulfur Springs and Rainelle in Greenbrier Counties, have internet but little, if any, high speed broadband access. Internet service is still provided through dial-up internet service in most of Clay County. The ability to attract new business is severely impeded, thereby impeding economic recovery. The West Virginia State Legislature established a Broadband Enhancement Council to address state-wide access to broadband issues in 2016. It convened on September 6, 2016 and the Economic RSF partners will coordinate with the council to explore ways to address the broadband infrastructure needs.

The topography will always be an obstacle to economic development in West Virginia. The inability to locate and develop large sites with adequate access to infrastructure (water, sewer, and roads) are problems in the impacted area. There are few, if any, sites of more than 50 acres available within the impacted area. Smaller site development is also impeded by the abandoned buildings in many of the communities. Only one county and one municipality impacted have a building commission and code enforcement program. The lack of building codes and commissions in most counties makes removal of these abandoned buildings extremely difficult.

IMPACT TO TOURISM AND REGIONAL BRANDS

The 12 counties most heavily impacted by the flooding include communities with diverse topography and a variety of tourism attractions and eco-tourism destinations. State tourism officials have said that tourism destinations across the state, from Oglebay Resort in Wheeling to attractions in the Eastern Panhandle, are fielding inquiries about June's flash flooding. The tourism sector generates nearly \$5 billion into the state's economy annually and 46,000 jobs, the state reported. While the flood is expected to take a toll on the industry, the state has yet to estimate how many visitors or dollars might be lost.

One area where tourism could see a drastic decline is in Greenbrier County. Tourism is the largest industry in the county and generates \$98 million annually in economic revenue. Greenbrier County's Convention and Visitors Bureau created the "Tourism Recovery Marketing Plan" aimed at countering the public's impression that the devastation caused by the flash flooding has closed down the region's tourism industry.



Greenbrier County is home to the most well-known tourist destination in the state—the Greenbrier Resort. The resort, which employs about 1,800, was closed for weeks and its signature event, the Greenbrier Classic PGA Tour tournament, was canceled because of the June flood. At the time of the tournament cancellation there were about 33,000 ticket holders, and all 710 guest rooms had been rented. When fully accounted, the resort owners expect the losses will be in the millions of dollars.

The indirect economic fallout of these cancellations also impacted area lodging, restaurants, shops and other tourism attractions. Of the businesses surveyed by regional economic development council, about 64 reported an aggregate loss of \$3.8 million.

In Fayette County, the New and Gauley Rivers draw white water rafters from around the world. The season is short, about three months, but it engages a variety of businesses including lodging establishments, restaurants, equipment rentals, food and beverage stores, vehicle and boat support services and rafting tour guides. The flood hit in the heart of the season and businesses reported that they lost a month of annual revenue. The revenue losses were attributed to both the rising water from the flood and flooding caused by the closing of the spillway at the Summersville Dam. The dam was closed to protect communities down the river in Fayette and Kanawha Counties. When the dam was closed, the white water tours were also halted until water levels could return to seasonal norms. Many of the employees involved in the whitewater and related industries work on a per diem basis, meaning they were out of work as long as there were no patrons to serve.

In Nicholas County, Summersville Lake lost a month of tourism revenue because of the dam closure. Waters rose 90 feet in just a matter of days. Some of the restaurants, equipment rentals, and other businesses that rely on the lake for customers were closed for as little as three days while others have been closed for nearly three months.

In Kanawha County, the River Front Festival in Charleston was severely curtailed after the flood waters rose along the Kanawha River. Thousands attend the festival at Haddad River Front Park, within a short walk of restaurants and bars.

In addition to the major losses reported to local officials, there are many smaller businesses that lost business because fishing and camping activities were interrupted. In Webster County, for instance, revenue was lost to campgrounds and rentals and bait and tackle shops, such as the Baker's Island Recreational Area, Homestead Acres Campground, Living Water Cabins and fourteen additional smaller campgrounds.

The total revenue loss to the tourism-based economies might become clearer after affected municipalities collect their third quarter business and occupation tax after October 1. The third-quarter report should reflect local revenue losses that were not captured in the second quarter report, which was released at the end of June, just a few days after the flood event.



AGRICULTURE LOSSES

The agriculture industry, particularly in Greenbrier County, took a significant hit from the June flood, but as the water has receded, agriculture officials have said the losses, particularly of livestock, were not as heavy as they had initially feared.

The USDA Farm Service Agency and the West Virginia Department of Agriculture have reported that 6,000 farms across 32 counties sustained some damage from crop and livestock losses to downed fences. Farmers lost an estimated \$1.7 million in corn crops, \$1.6 million in hay and about half a million dollars in pasture and forage land was damaged. About 800 cattle, sheep and other livestock were lost, fewer than expected, in some part due to the fact that many fences were destroyed, which allowed much of the livestock to leave and seek safety in the mountains.

The agriculture losses could increase over the next few months as farmers have been urged to avoid any new planting activity until the end of September to avoid the threat of contamination from flood water that can leave bacteria that can affect the soil for up to 90 days. Any potential impact from such contamination will be monitored and assessed after the 90-day period.

Upcoming Economic Recovery Efforts

Over the next two months, the state disaster recovery team plans to conduct listening sessions and other outreach to regional and community leaders in order to identify priority recovery challenges and resiliency initiatives. The Economic RSF, the Housing RSF and the CPCB RSF have been asked to participate in the state outreach and all three RSF teams will be collaborating with the state to identify federal and private sector resources that might support local recovery and resiliency.

The Economic RSF team will work closely with the West Virginia Department of Commerce, and the state recovery team, regional EDDs, and other organizations that work directly with businesses to identify any additional economic recovery issues and opportunities to support business assistance and economic revitalization and resiliency.

The team will also engage with the Community Planning and Capacity Building RSF and its partner organizations to explore opportunities to engage regional planning and development councils and associated economic development districts in the development of local and regional recovery and resiliency strategies.

The Economic RSF will collaborate with the Housing RSF and its partners to monitor housing and social service issues as they continue to emerge with the objective of identifying economic consequences to communities in the most severely impacted regions.

The Economic RSF will consider points of engagement on the priority issues identified through outreach to impacted communities and issues reported by other federal, state and regional entities. The team will also explore the interest of the state and community leaders in developing programs that encourage economic diversification, nurture entrepreneurship and support economic growth and sustainability.



The Economic RSF also will assist West Virginia by offering case studies and best practices of communities that have sustained similar natural disasters and successfully implemented economic recovery strategies that led to more resilient economies. The team could explore the interest of the state recovery team in conducting economic resiliency workshops that emphasize practical applications economic developers can use to connect the dots between economic development, economic recovery and economic resilience.

Because of the pre-existing economic downturn in many of the flood-impacted communities, the Economic RSF could also assist the state by providing training on unique components/metrics to both evaluate existing economic development plans and to initiate the integration of economic resilience in all community planning.



Housing Recovery

The Housing RSF coordinates and facilitates the delivery of Federal resources to implement housing solutions that effectively support the needs of the whole community and contribute to its sustainability and resilience. Housing is a critical and often challenging component of disaster recovery, but must be adequate, affordable, and accessible to make a difference for the whole community.

Background

The Housing RSF Field Coordinator, Interagency Recovery Coordination (IRC), state and federal RSF partners, regional federal banking organizations, the West Virginia Governor's Office, the West Virginia National Guard and other Departments at the state and local level collaborated on planning, policy and resources across housing and community development needs in the impacted communities.

The primary focus was on finding ways to use existing resources for more resilient building practices to mitigate against future disasters while also searching for additional resources from Non-Governmental Organizations (NGOs). Work with partners also clarifies where the impacts are most significant, from a community perspective, and how federal, state or local recovery capabilities are, or may be exceeded during recovery.

In addition to coordinating with other housing partners, HUD works with its grantees, housing providers, continuum of care providers, housing counseling agencies and entitlement communities throughout the state on housing and community development issues. In rural areas, USDA-Rural Development can provide significant reach across local partners to low- and moderate-income families and communities in need.

Housing Recovery Support Function	
Coordinating Agency	
U.S. Department of Housing and Urban Development (HUD)	
Primary Agencies	
FEMA/DHS	
Department of Agriculture (USDA)	
Supporting Agencies	
American Red Cross (ARC)*	
Corporation for National and Community Services (CNCS)*	
U.S. Department of Commerce (DOC)*	
Department of Energy	
Department of Health and Human Services (HHS)	
Department of Veteran's Affairs (VA)	
Environmental Protection Agency (EPA)	
General Services Administration (GSA)	
National Voluntary Organizations Active in Disaster (NVOAD)*	
Small Business Administration (SBA)*	
U.S. Access Board	
<i>*Federal agencies engaged in MSA development</i>	



Housing Recovery Issues

In the 12 West Virginia counties designated for federal assistance, June storms damaged more than 4,600 homes and 73 were completely destroyed. The hardest hit counties were Clay, Kanawha, Nicholas, and Greenbrier. Rapid flood surges often cause severe disruptions to rural communities in West Virginia's mountain valleys. Landslides and mudslides ruin many homes and disrupt travel and access into and out of these communities.

As of September 7, 2016, FEMA had provided rental assistance to 2,849 flood survivors (2,191 homeowners, 658 renters) displaced from their homes by the disaster. The real number of those displaced is higher as many who were displaced were not eligible for or, did not ask for FEMA rental assistance.

By the same date, FEMA had awarded its maximum grant of \$33,000 to 281 homeowners; generally max grants are made only to those whose homes were lost or very severely damaged. To date, FEMA has made grants for home repairs and other needs assistance totaling more than \$40 million to 4,860 applicants. The average housing assistance grant amount was more than \$7,300. However, FEMA deemed nearly 2,200 applicants ineligible. Indications are that a number of these were denied due to reasons that were unrelated to the extent of storm damage.

Increased Financial Burden Of Homeownership

There are limited federal housing resources for displaced households due to low-vacancy rates statewide. These are typical shortcomings after a disaster.

- Federal programs that fund construction of affordable rental housing may be available but state and local agencies must apply for the funds and construction could take years. The need to obtain waivers to be eligible for some federal programs can extend this timeline even longer.
- There are several reasons FEMA may reject applicants for home repair assistance even if their home was damaged by the recent disaster.
 - ✓ Nearly one in six housing assistance applicants were deemed ineligible because of pre-existing structural conditions of their residences. Often it is difficult for homeowners with lower incomes and resources, to keep up with home repairs and maintenance, thus bringing into question the pre-existing habitability of their disaster-damaged homes.
 - ✓ Some flood survivors' level of illiteracy may have left them unable to complete the application properly or to understand letters from FEMA.
 - ✓ FEMA policy states that applicants who cannot prove home ownership are ineligible for housing assistance. Inability to prove ownership of inherited homes, ownership disputes and rent-to-own fraud may cause FEMA to deny housing assistance—even though the applicant has experienced flood damage to their dwelling.
- Many West Virginia homeowners with lower incomes, meager family resources and low property values experienced significant damage from the recent flooding and lack the



resources such as; savings, insurance, FEMA grants, loans or other assistance, for property repairs to make their homes habitable. The problem can be exacerbated for homes that have been damaged by repeated flooding.

- Families with few resources are less likely to recover without assistance. Even if available, an insurance payout would be low due to the property's poor condition. Replacement costs may be dramatically higher than the property's current value if the home must be fully rebuilt. In addition, poorer families may not have sufficient income or a proper credit score to qualify for an SBA disaster recovery loan.
- There may be federal and non-federal programs that can provide home repair assistance to those who did not qualify for FEMA assistance or who still have unmet needs after receiving FEMA assistance, however, the gap between disaster survivors' needs and these potential sources remains significant.

Habitable And Environmentally Healthy Housing

- Even minimal levels of floodwaters provide an excellent environment for the growth of mold under and throughout a house. Mold remediation must be part of any local repair or rehabilitation program.
- Housing rehabilitation should bring the structure back to a "habitable housing" standard, which is in accordance with local health and safety regulations, codes, and ordinances.
- A property should be repaired to ensure plumbing, electrical and structural systems and fixtures are fully operational and meet existing building codes.
- Severely damaged or destroyed residences, both stick built and manufactured, should be demolished and the debris properly disposed of off-premises. This may require a coordinated, cross-jurisdictional program to properly dispose of the demolition debris with serious consideration for environmental health issues.
- With older structures there may be other significant environmental hazards i.e., lead-based paint and asbestos which must be abated and disposed of properly.

Prevalence of Blight in Communities

- Blighted and/or abandoned properties are a concern in some communities, particularly in rural areas. Neighborhoods in generally poor condition are likely to take longer to recover as there are fewer individual resources to support the recovery. This may result in spotty reconstruction which will increase community infrastructure costs and decrease property values for an extended period.
- Statutory requirements on the use of federally funded programs often restrict the use of such funds beyond what is defined in strategic plans, thus requiring a waiver for use in disaster recovery.
- Recovery from this disaster is largely contingent on resources to rebuild, relocate, or remove damaged structures and the capacity to perform repairs/reconstruction quickly. Reconstruction speed is important, because temporary housing costs may draw from the reconstruction resources of disaster survivors.



- In older neighborhoods, some homes undergoing repairs/reconstruction must be upgraded to modern building codes. Housing built to older codes is more likely to sustain damage during a disaster than housing built to modern codes. While some codes may not prevent intrusion of water into the dwelling, the anchoring requirements could prevent a home from floating off the foundation. Homes which shift off the foundation are usually demolished because the cost of repair is unaffordable. This would tend to exacerbate the flood's impact on older, less affluent neighborhoods.
- Many homes in the designated counties are served with disaster-damaged and/or improperly installed private septic systems. These pose a health risk to the homeowner and the public. Reconstruction/repair of damaged homes must include repair or replacement of damaged individual, private waste treatment systems.
- Surface water quality is a public health issue and can become an economic, natural and cultural resource issue. Septic leachate, if not properly treated, can infiltrate private wells and contaminate drinking water sources. Excess fecal coliform and the associated materials which lower dissolved oxygen levels reduce benthic stream habitats. Degraded natural habitats will then make the streams less desirable for fishing, boating, and other outdoor activities.

Including Resilience In Rebuilding

- Housing recovery must have a strong mitigation component to break the cycle of disaster disruptions. Recovery of impacted housing throughout the valley communities involves three inter-related resilience issues: strong private water crossings, flood resistant septic systems and elevated, flood-resistant residences.
- If a community participates in the National Flood Insurance Program (NFIP) and the cost to repair a home within a special flood hazard area (as designated in the local Flood Insurance Rate Map) exceeds 50 percent of the market value of that structure, then the home must be either removed, relocated, or raised above the basic flood elevation. Not all communities participate in the NFIP and these may not have adopted the program's rebuilding requirements. Some jurisdictions lack staff to enforce building codes even when flood damage prevention ordinances are in place. Costs to repair homes which have been determined to have substantial damage may exceed the market value of the residence. Impoverished homeowners may lack resources to conform to codes.
- As FEMA supports state and local officials to bring disaster-damaged homes and communities into compliance with NFIP and building codes, the result will lead to an increased level of resilience. Bringing the most vulnerable, impacted communities back to a more resilient level is a priority issue. This may lead to a decision to not rebuild in certain areas because of their flooding risk. Such decisions should be based on the best available flood mapping products and information, and comprehensive flood damage prevention standards. The unique, mountainous terrain typical of the impacted communities in West Virginia will require a collaborative planning effort to discover model rebuilding design criteria for both stick-built and manufactured housing. This approach is intended to protect the homeowner and community by bringing homes up to modern building codes. Local governments may need technical assistance on these matters from state and federal partners.



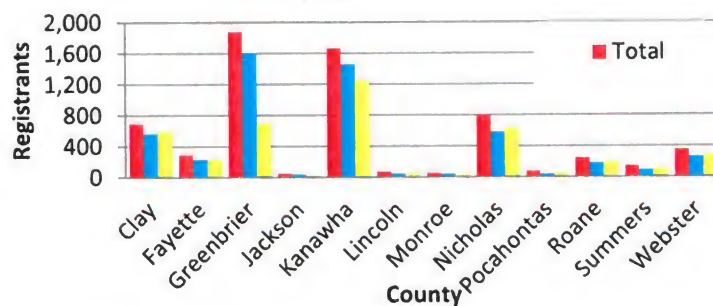
- West Virginia has been active in property acquisitions through the FEMA Hazard Mitigation Grant Program though property acquisitions have declined drastically since the number of acquisitions peaked in 2008.
- Over 200 private access water crossings, the sole access many survivors have to public roads, were destroyed. Building back in a more resilient fashion not only involves mitigation of flood risk to the structure, but also rebuilding private, individual water crossings to a standard developed by the West Virginia VOADs,
- Following several federally declared West Virginia flooding disasters in 2015, VOADs were active in the repair and /or replacement of private water crossings. They were particularly successful in their utilization of a Mennonite Disaster Services, which included an engineer who developed plans and specifications for resilient bridge replacements. Of the 16 bridges the Mennonites built, only one sustained minor damage by the June floods and was quickly repaired. The Mennonites are scheduled to return to West Virginia this year to build more privately owned bridges. FEMA has also developed guidance on private water crossings.

Analysis and Impacts

After survivor's register for assistance, an inspection is conducted to estimate the FEMA Verified Loss (FVL). The inspection process differentiated between property owners and renters by examining both real and personal property loss. Renters could only experience loss of personal property because their home was owned by the landlord¹.

Figure 1 shows the number of registrants for each of the declared counties as well as those registrants who were documented as having water in the home or a FVL greater than \$5,000. While Greenbrier and Kanawha Counties are similar in the number of registrants, Greenbrier County has a population² of 35,480 compared to Kanawha County's 193,063. Comparing the number of households in each county that experienced water in the home or a FVL greater than \$5,000 to the total number of households in that county shows that Clay, Greenbrier, Nicholas and Webster had more than 5 percent of the households experiencing one or both of the two. (Figure 2)

Figure 1. Individual Assistance Registrants from the Declared Counties



¹ The fact that some inspections resulted in no identified real or personal property loss is likely a result of processes which encourage widespread registration and not necessarily unmet need.

² 2010 Demographic Profile Data. Table DP-1

Figure 2. Proportion of County's Households Impacted

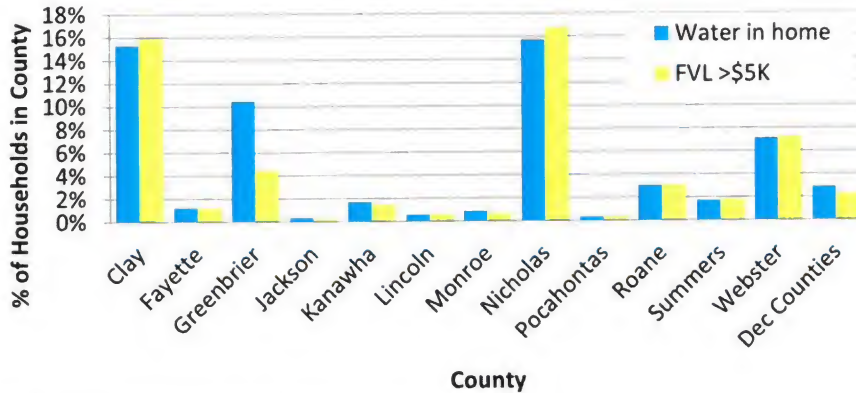
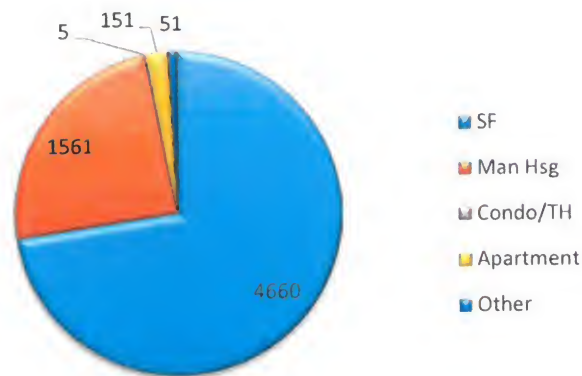


Figure 3. Housing Types in IA Declared Counties



The pie chart on the previous page shows the housing types for the registrants in the IA declared counties. Note that the vast majority, 97 percent, of the stock is either single family homes (72.5 percent) or manufactured housing (24.3 percent), with few condominiums, townhouses or apartments.

From information provided by FEMA and West Virginia state and local governments, 27 communities were identified as particularly impacted by the flooding. At the time this document was prepared, in those communities, there were 4,892 registrants with FEMA, representing 76.2 percent of the 6,422 registrants from all 12 IA declared counties (Table 1). Note that 80.7 percent of the registrants from these communities are owners and 19.3 percent renters. These communities have a slightly higher proportion of renters than was seen among the registrants from the 12 counties where 15.9 percent are renters.

Table 1: Most Impacted Communities

Community	Owners	Renters
ALDERSON	174	53
ANSTED	29	1
BELLE	18	0
CAMDEN-ON-GAULEY	87	17
CHARLESTON	137	28
CLAY	133	21
CLENDENIN	819	229
COWEN	97	6
FAYETTEVILLE	41	1
GAULEY BRIDGE	19	4
HILLSBORO	21	0
HINTON	88	20
LEWISBURG	133	17
MARLINTON	55	14
MEADOW BRIDGE	22	1
OAK HILL	24	3
QUINWOOD	26	1
RAINELLE	487	164
RAVENSWOOD	18	2
RICHWOOD	329	65
RONCEVERTE	127	31
RUPERT	153	26
SPENCER	14	1
SUMMERSVILLE	164	23
UNION	6	1
WEBSTER SPRINGS	175	28
WHITE SULPHUR SPRINGS	552	187
Grand Total	3948	944

Within these 27 communities, the impact is further concentrated. Zip codes are a convenient spatial analog as they are well understood as locations by residents and community leaders. These 27 communities are represented by 43 zip codes. When considering only the zip codes where 100 or more registrants were located, 14 zip codes³ are identified. In those zip codes, 4,397 registrants are located (3,512 owners and 885 renters). That constitutes 89.9 percent of the total number of registrants in the most impacted communities. This is shown below in Table 2.

³ Examining the remaining 29 zip codes shows a dramatic drop-off, with only two zip codes having between 50 and 99 registrants and the remaining 27 zip codes with less than 50 registrants (the majority of them with under 25).



Table 2: Most Impacted Areas

Community/Zip		Total Registrants	Owners	Renters
ALDERSON	24910	227	174	53
CAMDEN-ON-GAULEY	26208	104	87	17
CLAY	25043	153	132	21
CLENDENIN	25045	1048	819	229
COWEN	26206	103	97	6
HINTON	25951	108	88	20
LEWISBURG	24901	150	133	17
RAINELLE	25962	650	486	164
RICHWOOD	26261	394	329	65
RONCEVERTE	24970	158	127	31
RUPERT	25984	179	153	26
SUMMERSVILLE	26651	187	164	23
WEBSTER SPRINGS	26288	203	175	28
WHITE SULPHUR SPRINGS	24986	733	548	185
Total		4397	3512	885

While the broad goal is to help all disaster affected communities, families and individuals recover from the flooding, experience has shown that the areas where the damage is most concentrated face the greatest challenges to recovery. As a result, it is prudent to consider these areas.

The following table on page 37, shows the population, percent of the zip code population that are registrants, and the Adjusted Gross Income (AGI)⁴ for the zip code. The percent of total column shows the share of registrants for each highly impacted zip code relative to the total across the 27 identified communities.

⁴ City-data.com, population data are 2013 estimates and AGI is for tax year 2012.



	Zip Code	Owner	Renter	Total	% of Total (of 4892 owners & renters)	Zip Code Population, 2013	Registrants, % of population	Zip Code AGI, 2012
ALDERSON	24910	174	53	227	4.6%	5616	4.0%	\$35,960
CAMDEN-ON-GAULEY	26208	87	17	104	2.1%	821	12.7%	\$38,023
CLAY	25043	132	21	153	3.1%	1724	8.9%	\$39,382
CLENDENIN	25045	819	229	1048	21.4%	5640	18.6%	\$41,574
COWEN	26206	97	6	103	2.1%	2781	3.7%	\$39,177
HINTON	25951	88	20	108	2.2%	5987	1.8%	\$35,411
LEWISBURG	24901	133	17	150	3.1%	8436	1.8%	\$56,171
RAINELLE	25962	486	164	650	13.3%	3792	17.1%	\$35,904
RICHWOOD	26261	329	65	394	8.1%	3068	12.8%	\$32,400
RONCEVERTE	24970	127	31	158	3.2%	4950	3.2%	\$38,919
RUPERT	25984	153	26	179	3.7%	2307	7.8%	\$34,217
SUMMERSVILLE	26651	164	23	187	3.8%	10286	1.8%	\$50,830
WEBSTER SPRINGS	26288	175	28	203	4.1%	3829	5.3%	\$35,370
WHITE SULPHUR SPRINGS	24986	548	185	733	15.0%	5496	13.3%	\$42,470
Note: West Virginia Adjusted Gross Income for 2012 was \$48,628								

Three of the zip codes had more than 10 percent of the population registered with FEMA. Each of these zip codes reports lower Adjusted Gross Income than for the state as a whole. The aggregate impact of a large portion of the zip code suffering disaster damage is delayed community recovery. These three zip codes should be a priority for recovery efforts across the 27 highly impacted communities. As an example, in zip code 25045 (in Clendenin), there were 819 owners who registered with FEMA. Over half those property owners were not in the Flood Insurance Rate Map A Zone⁵ and 218 of those properties experienced some degree of flooding, with 89 seeing six inches or less. While the structural impact of such flooding depths is comparatively minor, the expense⁶ to the homeowner can be significant.

For residents displaced by flooding, housing may be needed temporarily during repair or as a permanent alternative. The Market-at-a-Glance reports suggest that each of the counties may have a significant amount of vacant housing that could be available for use. This is in addition to housing stock which is vacant but is currently considered not on the rental market (this category generally includes vacation and similar housing that may be vacant for much of the year).

⁵ The A Zone is that area where there is a 1% probability of a flood in a given year, often called the 100-year flood plain.

⁶ Shallow flooding could result in the loss of flooring, destruction of personal property and may require repair or replacement of drywall, doors, and cabinets. This would not be covered under a homeowner's policy and being outside the flood zone, most homeowners would not carry NFIP flood insurance.



County	Vacant Housing ⁷	
	For Sale	For Rent
Clay	43	26
Fayette	252	245
Greenbrier	312	400
Jackson	186	177
Kanawha	1424	1420
Lincoln	40	67
Monroe	132	102
Nicholas	74	211
Pocahontas	47	675
Roane	45	122
Summers	55	40
Webster	n/a	7

The percentage of FEMA maximum grants for housing assistance is much higher on this disaster (DR 4273-WV) than other recent disaster declarations. Some 278 maximum grants out of 8,984 total applications represent over three percent of the total. In West Virginia's narrow valleys there is often very little room to locate far from streams because of the steep geographic terrain. Housing traditions often dictate family members live on land in proximity to other family members. During floods, the results are disastrous as homes are washed down stream or otherwise destroyed.

Multiple flooding disasters in combination with a significant decline in the coal mining industry have had a devastating impact on the 12 designated counties. Coupled with limited development opportunities in the valleys adjacent to the flooded waterways, West Virginia communities are demographically and physically vulnerable to flood disasters.

Recovery from a disaster is largely contingent on resources to repair or rebuild the damaged housing stock. In urban areas, that is dependent on the availability of construction contractors, home builders and remodelers. In more rural areas, many of the residents may possess significant capacity that can be brought to bear through an informal process. As a result, what might seem to be a relatively low production of housing as evidenced from building permit activity may understate the community capacity.

For many property owners, the cost of repairs may exceed the value of the home, particularly for homes which were previously affordable. This is likely to impact homeowners as well as owners of rental properties. These owners may face reconstruction costs that exceed any insurance or other assistance, delaying reconstruction. Among lower income disaster survivors, there may also be a lack of experience with finding and managing the contractors capable of performing the repairs.

Reconstruction of housing post-disaster often takes an extended period of time as the individual property owners generally don't want to cede decisions to others. If a state or local government

⁷ 2014 American Community Survey estimates in Market at a Glance

agency were to take the lead and commit to build a large number of homes on private lots, it is probable that the homes would be built faster and cheaper than if the individual homeowners each engaged in the contracting process. Because there would be experienced construction professionals engaged on behalf of the homeowners, it is likely that the home quality would also be higher.

However, the ability of the state or local government to embark on such a total reconstruction effort may be limited by resources and the legal capacity to perform construction on private property. The government needs to have the funding to engage in an aggressive, targeted construction program.

In contrast, Incremental Reconstruction is a concept that came out of Hurricane Katrina, where disaster survivors serially occupied a number of types of temporary housing before they moved back to a permanent housing solution. Because each of the temporary products (travel trailer, HUD code manufactured housing, or more innovative products such as a Katrina Cottage) was installed and occupied and then vacated and removed, significant expense and disruption occurred with each phase of the process. Incremental Reconstruction solves this problem by building the survivor's home incrementally, the construction for the earliest phase of the process would be incorporated into the subsequent phases.

An early concept proposed rebuilding the garage for residency and allowing the family to occupy the garage, which would be equipped with cooking and sanitary facilities, prior to completing, or even starting reconstruction on the rest of the home. The garage would be designed to allow it to revert to a garage when the remainder of the project is complete and reconstruction of the remainder of the home would be the responsibility of the residents, with possible assistance of external charitable groups if necessary. From a disaster response and recovery perspective, this allows the federal government to focus efforts on getting families back in permanent, habitable homes quickly so the extended engagement seen following Hurricane Katrina would be shortened. By engaging the state and local governments, any progress goals or deadlines would be developed to support community based priorities.

Following implementation, such an approach might be accomplished fairly quickly because the components could be standardized and fabricated off site. The families could feel empowered as they would play a key role in their long-term recovery. A brochure produced by HUD in 2012 outlining strategies for incremental reconstruction of disaster damaged homes is available for more information.

FEMA has declared Clay, Kanawha, Greenbrier, and Nicholas counties eligible for direct housing assistance. To date, 26 families have been licensed into FEMA-supplied Temporary Housing Units (THUs). There are sufficient units to provide to all eligible applicants who choose, and they may occupy the unit for up to 18 months as they seek a more permanent housing solution.

Federal programs that fund construction of affordable rental housing may be available, but state and local agencies must apply for the funds and construction, which takes time. Affordable rental housing is a significant issue where rental housing vacancy rates are low and impacts to low-



income or hard-to-house families are high. Thus, recovery programs for rural and small town renters remain an issue and an unmet need. FEMA has resources available to fill direct housing needs in West Virginia. However, it remains unclear as to what extent of the region's long-term housing needs may be, particularly how many individuals will need THUs. The region has a very limited number of sites that can accommodate multiple THUs and any sites will likely require substantial expenditures for site preparation, infrastructure, utilities, etc.

Recovery from this disaster is largely contingent on resources to rebuild, relocate, or remove damaged structures and the construction capacity to perform the repairs/reconstruction. Reconstruction speed is important because temporary housing costs may draw from the reconstruction resources of disaster survivors.

Several communities have lost all of their elder care facilities representing a large portion of the population and potentially requiring the relocation of elderly residents outside of their current communities.



Next Step: The Recovery Support Strategy

With the completion of the MSA, the IRC has gained a good understanding of the issues caused directly by the flood. The assessment made clear that many of the gaps in West Virginia's capabilities are the result of conditions that have existed for years and very well may hinder a successful recovery. In particular, a slumping economy, limited connectivity and housing challenges will test the State's ability to build resiliency for future events.

The next step in the IRC mission is the development of the Recovery Support Strategy (RSS), an outline of how the federal government and other partners, can support the State's recovery. The RSS will provide identified activities which have been structured to meet goals, objectives and strategies to address the recovery issues established in the MSA.

Ideally, the RSS will include potential contributions from state and local partners, non-profits, the faith-based community and the private sector. While all recovery is local and must be championed by local officials, business leaders and citizens, it is the responsibility of the whole community to recover from disaster.

The State of West Virginia has suffered immensely from recent economic and natural disasters, and has many challenges ahead. However, since disaster recovery often focuses attention and resources on the State, the RSS can be a tool to guide opportunities to build back better and more resiliently for the future.



Tabor, Lee G

From: Thompson, Mary Jo
Sent: Wednesday, June 13, 2018 11:22 AM
To: Tabor, Lee G
Subject: FW: WV Recovery Support Strategy (RSS)
Attachments: RSS DR-4273-WV, FINAL 2.14.17.pdf

From: Marotto, Regina <regina.marotto.2@fema.dhs.gov>
Sent: Tuesday, February 21, 2017 2:21 PM
To: Thompson, Mary Jo <Mary.Jo.Thompson@wv.gov>; Tarry, Russell W <Russell.W.Tarry@wv.gov>
Cc: Snyder, Kevin <kevin.snyder@fema.dhs.gov>
Subject: WV Recovery Support Strategy (RSS)

Hello Mary Jo and Russ,

The FEMA Interagency Recovery Coordination (IRC) team has completed the Recovery Support Strategy (RSS) and it is attached for your information and use.

You both have been our main points of contact for this process and have been involved from the beginning, so we're confident you're aware of the main points and challenges presented in the document. If you would like to discuss any of this in person or through a conference call, however, we're happy to set something up.

Feel free to contact Kevin or I with any questions.

Thanks!

Gina

--

Regina Marotto MPH, MEP
Federal Disaster Recovery Officer (FDRO)
DR-4273-WV
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The majority of the plants have been repaired and are operating, however, the flood event revealed a number of vulnerabilities pertaining to water treatment plants in the impacted area. These vulnerabilities include the lack of flood risk management measures at the facilities, lack of access during flood events, lack of emergency backup power and unreliable communication systems during high water and extreme events.



Figure 2: Wastewater Treatment Plant. Source: WVNS-TV

In addition to damage to water treatment plants, eight sewage treatment plants (STP) within the impacted area were also damaged due to high water and bank erosion. These facilities and their damages include:

Facility	Impacts
Craigsville STP	Facility flooded (plant and pumps)
Richwood STP	Pump stations inoperable Line damage
White Sulphur Springs STP	Pump station and creek crossing inoperable Line damage
Ronceverte STP	Facility flooded Loss of power Main pump station inoperable
Rainelle STP	All pump stations inoperable Line damage
Clay STP	Facility flooded Loss of power

The flood event impacted approximately 45 water treatment plants. Flooding, mud slides, landslides, bank erosion and bridge and road damages resulted in boil water advisories (BWA) due to damaged lines and water treatment plants being shut down due to turbidity, water loss and lack of power, flooded facilities, and lack of access to facilities during the flood event. This caused approximately 365,000 customers to be without service either during or after the flood event.

The table below details the most significantly impacted water treatment facilities:

Facility	Damage Description
Grantsville Municipal Water Department	plant shut down due to high turbidity
Clay-Roane Public Service District	facility flooded water loss line damage lack of access to lines and facility
West Virginia American Water-Kanawha Valley Public Service District	water loss lack of access to lines loss of communication loss of power lack of emergency power generators reduced pressure
Walton Public Service District	water loss line damage lack of access to facility loss of communication loss of power unreliable emergency power generators
Fort Gay Water Works	plant shut down due to high river levels line damage
Birch River Public Service District	water loss line damage
Craigsville Public Service District	facilities flooded
Richwood Water Works	water loss line damage loss of power
Lewisburg Public Service District	line damage loss of power
White Sulphur Springs Public Service District	lack of access to facility loss of power
Kanawha Falls Public Service District	plant shut down due to high turbidity line damage
Beverly Water and Sewage Plant	BWA due to high turbidity
Camden on Gauley-Craigsville Public Service District	loss of communication BWA due to extensive flooding

Infrastructure Systems

U.S. Army Corps of Engineers



Mission: *works to efficiently facilitate the restoration of infrastructure systems and services to support a viable, sustainable community, and improves resilience to and protection from future hazards.*

The June 2016 storm event severely impacted a large portion of West Virginia. Unfortunately, most of the communities affected by the flood event already faced economic challenges and therefore lack the tools and resources necessary to fully recover. One of the most significant challenges in these areas, is a lack of infrastructure. This lack of adequate infrastructure affects every aspect of life from internet access to adequate wastewater treatment.

The Infrastructure Systems portion of the RSS builds upon the findings and conclusions of the MSA and contains specific strategies to not only address infrastructure damages resulting from the June 2016 flooding, but also to address gaps in infrastructure resiliency. It summarizes key findings regarding infrastructure systems in the State of West Virginia and defines recovery issues, goals, objectives, and strategies for recovery and to build resiliency following the flood event.

Key Findings

The Infrastructure RSF identified three recovery issues:

- Water and wastewater treatments were damaged and lack resiliency to recover
- Lack of broadband access makes flood recovery difficult in economically depressed areas
- Schools in the flood impact area damaged and/or destroyed

Issue: Many damaged water and wastewater treatment plants lack resiliency for timely recovery

Many water and wastewater treatment plants were damaged during the flood event. Given the aged and deteriorating condition of the plants and their infrastructure prior to the flood event, these facilities lack the resiliency for timely recovery.